

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Lawrence J. Merkel, on 2/4/2010.
3. The claims have been amended as follows:
 1. A computer accessible storage medium encoded with instructions forming a checkpoint service, wherein the instructions, when executed:

receive a request to register a checkpoint segment from an

application that is separate from the checkpoint service;

replicate the checkpoint segment from a first local storage of a first

node to at least one other node responsive to the application

registering the checkpoint segment with the checkpoint

service, wherein the checkpoint segment is stored into the

first local storage by the application, and wherein the

checkpoint segment comprises a state of the application,

and wherein the first local storage is directly accessible only to the first node; and

load a copy of the replicated checkpoint segment from the at least one other node into a second local storage of a second node responsive to a request from the second node to load the copy, wherein the second node is to execute the application, wherein the checkpoint segment is identified by a checkpoint segment name that is unique within a cluster including the first node and the second node.

2. (Cancelled)

3. The computer accessible storage medium as recited in claim 1 wherein the at least one other node comprises two or more other nodes.

4. The computer accessible storage medium as recited in claim 1 wherein the request to load the copy is issued by the application executing on the second node.

5. The computer accessible storage medium as recited in claim 1 wherein the request to load the copy is issued by an agent that monitors the application on behalf of a cluster server.

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6. The computer accessible storage medium as recited in claim 1 wherein the instructions, when executed, retrieve the copy from one of the at least one other node responsive to the request.

7. The computer accessible storage medium as recited in claim 1 wherein the at least one other node is configured to load the copy into a global storage, and wherein the instructions, when executed, retrieve the copy from the global storage responsive to the request.

8. The computer accessible storage medium as recited in claim 1 wherein the instructions, when executed, replicate the checkpoint segment by performing at least:

reading the checkpoint segment from the first local storage of the first node; and

transmitting the checkpoint segment to the at least one other node.

9. The computer accessible storage medium as recited in claim 1 wherein the instructions, when executed:

receive a retrieval request in the at least one other node; and

transmit the copy to a source of the retrieval request.

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10. The computer accessible storage medium as recited in claim 1 wherein the instructions, when executed:

receive the checkpoint segment from the first node in the at least one other node; and

store the checkpoint segment in the at least one other node.

11. The computer accessible storage medium as recited in claim 1 wherein the at least one other node is configured to load the copy into a global storage, and wherein the instructions, when executed:

receive the checkpoint segment from the first node; and

store the checkpoint segment in the global storage.

12. The computer accessible storage medium as recited in claim 1 wherein the at least one other node is not capable of executing the application.

13. A method comprising:

an application storing a checkpoint segment of the application's state to a local storage of a first node on which the

application is executing, wherein the local storage is directly accessible only to the first node;

the application registering the checkpoint segment with a checkpoint service that is separate from the application;

the checkpoint service replicating a checkpoint segment from the first local storage of the first node to at least one other node responsive to the registering and the storing; and

loading a copy of the replicated checkpoint segment from the at least one other node into a second local storage of a second node responsive to a request from the second node to load the copy, wherein the second node is to execute the application, wherein the checkpoint segment is identified by a checkpoint segment name that is unique within a cluster including the first node and the second node.

14. The method as recited in claim 13 wherein the at least one other node comprises two or more other nodes.

15. The method as recited in claim 13 further comprising issuing the request to load the copy by the application executing on the second node.

16. The method as recited in claim 13 further comprising issuing the request to load the copy by an agent that monitors the application on

behalf of a cluster server.

17. The method as recited in claim 13 further comprising retrieving the copy from one of the at least one other node responsive to the request.

18. The method as recited in claim 13 wherein the at least one other node is configured to load the copy into a global storage, the method further comprising retrieving the copy from the global storage responsive to the request.

19. The method as recited in claim 13 wherein replicating the checkpoint segment comprises:

reading the checkpoint segment from the first local storage of the

first node; and

transmitting the checkpoint segment to the at least one other node.

20. The method as recited in claim 13 further comprising:

receiving a retrieval request in the at least one other node; and

transmitting the copy to a source of the retrieval request.

21. The method as recited in claim 13 further comprising:

receiving the checkpoint segment from the first node in the at least one other node; and
storing the checkpoint segment in the at least one other node.

22. The method as recited in claim 13 further comprising:

receiving the checkpoint segment from the first node; and
storing the checkpoint segment in a global storage.

23. The method as recited in claim 13 wherein the at least one other node is not capable of executing the application.

24. A cluster comprising a plurality of nodes, wherein each of the plurality of nodes comprises a computer, and

wherein a checkpoint service executing on a first node of the plurality of nodes is configured to replicate a checkpoint segment from a first local storage of the first node to at least one other node of the plurality of nodes,

wherein the checkpoint segment is stored into the first local storage by an application executing on the first node separate from the checkpoint service, and

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wherein the application is configured to register the checkpoint segment with the checkpoint service and wherein the checkpoint service is configured to replicate the checkpoint segment responsive to the application registering the checkpoint segment and storing the checkpoint segment to the local storage, wherein the local storage is directly accessible only to the first node of the plurality of nodes, and

wherein the checkpoint segment comprises a state of the application, and

wherein ~~the~~ a checkpoint service executing on a second node of the plurality of nodes is configured to load a copy of the replicated checkpoint segment from the at least one other node into a second local storage of the second node responsive to a request to load the copy, wherein the second node is to execute the application, wherein the checkpoint segment is identified by a checkpoint segment name that is unique within a cluster including the first node and the second node.

25 The cluster as recited in claim 24 wherein the at least one other node is not capable of executing the application.

26. The computer accessible storage medium as recited in claim 1 wherein the instructions, when executed:

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record ~~a name of the checkpoint segment~~ the checkpoint segment
name to access the checkpoint segment for replicating.

27. The computer accessible storage medium as recited in claim 26
wherein the instructions, when executed:

select the at least one other node to which the checkpoint segment
is to be replicated responsive to the request to register the
checkpoint segment.

28. The method as recited in claim 13 further comprising:

recording ~~a name of the checkpoint segment~~ the checkpoint
segment name to access the checkpoint segment for
replicating responsive to the registering.

29. The method as recited in claim 28 further comprising:

selecting the at least one other node to which the checkpoint
segment is to be replicated responsive to the registering.

Conclusion

Any inquiry concerning this communication or earlier communications from
the examiner should be directed to CAMQUY TRUONG whose telephone

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number is (571)272-3773. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng Ai An can be reached on (571)272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Meng-Ai An/
Supervisory Patent Examiner, Art Unit 2195

Camquy Truong

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